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ABSTRACT

The purpose of this study was to create a distance supervision environment: Distance Supervision Hot Line (DSHL) through computer internet systems to assist the professional development of student teachers. The research group consisted of two supervisors (professors at a Teachers College) and 36 student teachers. The main tasks of this study were to design the homepage of DSHL and to communicate with each other on the topic of elementary science teaching. DSHL was designed by student teachers themselves. It consisted of seven sections: overview of research, research group, bulletin, my reflection, teaching resources, teaching difficulties and meeting in the air. The results indicated that student teachers easily relieved their task stress by voicing their "my reflection" and learned different strategies through watching "teaching difficulties" and talking in the office of "meeting in the air". Particularly, all of the student teachers indicated DSHL would increase the frequency of interactions among supervisors and them. This study provided teacher educators to promote the effectiveness of supervision through a daily-life technological product-World Wide Web (WWW). (Author)

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A Study of Creating a Distance Supervision Hot Line

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Abstract

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Keywords: distance supervision, student teachers, elementary school science.

I. Introduction

Supervision is a necessary and important helper for the professional development of a student teacher during the practice of being an official teacher. As we know, the problems and difficulties encountered by student teachers were inevitable as they entered into an unfamiliar school environment. No matter how much student teachers learned in the teachers college, they have to face strange children, colleagues, principles, students' parents, or school rules. Liao (1993) indicated some problems existing in student teachers: (1) unclear perceptions towards the role of student or of teacher, (2) shocked by the gap between ideal and reality, (3) lacking of academic background, (4) easily influenced by school associates, (5) suffering headache from classroom management and so on. It also showed that the successful first-year teaching experience was very important for the career of student teachers. Colleagues, continuing education institutions, and college supervisors would be the catalyst on their teaching journey. However, researches pointed out the college supervisors not providing enough assistance for student teachers because of geographical distance and time. This study applied Internet to increase the interactions between college supervisors and student teachers in order to put "supervision" into real practice. Without the limit of time and space, the technology of distance supervision is an alternative, which is worth of considering to enhancing the effectiveness of supervision.

A. Motives

During the implementation of this project, I, the main researcher, taught the courses of "Elementary science materials and methods", "teaching practice" for the junior college students (36 participants in this study) and their continuous class in their senior semester. My co- researcher, Professor Tan taught " Elementary Mathematics Materials and Methods" and co-taught with me the course about "teaching practice" for the same class. For a long time, the policy of my college has paid lots of attention on the course of "teaching practice" for the senior preservice students. On the average, there are six hours of teaching practice class every week, about 12 days of teaching visits and observations of elementary schools around Taiwan, and three consecutive weeks teaching in a certain elementary school in the second semester (whole class in one school, 2 students in one class, in charge of all courses). According to the beaten track, the professor of the course of "teaching practice" of the senior year naturally becomes the instructor professor of the next year (intern teaching in elementary school). Students are assigned to elementary schools according to their t-score and choice, so the student teachers of a whole class are scattered everywhere in Taiwan. I, the main researcher, took the chance to visit the student teachers serving in the distant or inconvenient areas in 1996 while visiting and observing elementary schools around Taiwan with the senior students. I found that though the traffic was not convenient, there were phones, and the student teachers also used computers. Therefore, I thought maybe the internet could complement the deficiency of traditional supervision job.

Usually, the beginning teachers have to turn in reports every two months, and participate in one-day back-camppus meeting every semester. Basically, the professor should visit and supervise all of them, but due to the reason that the student teachers of the class are everywhere and the professor him/herself also has classes in the teachers college, so the job of providing supervision is not that easy. Besides, if the student teachers encounter difficulties and do not solve their problems right away, it may cause negative impacts on their personality and affect their teaching. Although the colleagues and principals in the elementary school can be helpful, the professor, who has got along with them for almost two years (four years in my case), understands them better, so he or she can help more. In order to improve previous mentioned situations, I supposed that the Internet could be a tool to increase the interaction between professors and student teachers. It could also collect of problems and answers for the difficulties they encounter. .In practice: the Internet offers professors of the teachers college an alternative to supervise student teachers. In research, the professor can know more about the problems or difficulties challenged by the student teachers, and search for available elementary science resources for the beginning teachers through internet.

B. Objectives

The purpose of this study was to apply Internet as the media for supervising student teachers. The five objectives were listed as follows:

1. designing the home page of DSHL
2. holding workshops on practicing DSHL
3. collecting kinds of difficulties or problems encountered by student teachers on science teaching,
4. identifying the availability of teaching resources

   reflecting the advantage and disadvantage of DSHL

C. Limitations of research and possible solutions

The limitation of this research was whether student teachers had the knowledge of using computers, and whether they owned the necessary equipment or relevant facilities. In the first phase, we held an Internet conference to instruct the senior students how to contact with their professors with Internet. As for the necessary facilities, we would not force everyone to buy his or her own personal computer; moreover, not every elementary school had the software and hardware of the Internet, so we suggested them using modem, but they had to pay the phone bill. The solutions for these details were continuously discussed by professors and students. We tried to figure out a more efficient and cheaper way to communicate with each other.

D. The profits of this research

1.It offers an alternative way of supervision for the beginning teachers.

2.The professors and student teachers of teachers college have basic capacity of using Internet and become modern educators suitable for the society of collaboration in the 21st century.

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3.The researchers may collect more information of student teachers in natural science teaching using Internet. It can provide sufficient resources for teaching practice of the senior students.

II. Literature Review

Since the action projects of National Information Infrastructure, NII were announced by American Government in 1994, every country in the world has put lots of efforts on it as the bases of building Global Information Society, GIS. All of these actions considerably influence economic, society structure, educational culture and learning style. The President Clinton proposed NGI (Next Generation Internet) on October, 1996, and intended to connect public and private universities and national libraries with Hyper-net. Therefore, we can clearly see that Internet becomes omnipresent in 21 st century. It will become an important contextual condition for commerce and industry affairs, education, culture, entertainment...etc. (Xia, 1998). This study applied Internet as the media for supervising teacher cultivation.

Supervision is a necessary and important task for a student teacher during the practice of being a teacher. This study discussed the following five issues: (1) difficulties and problems encountered by student teachers and their significance; (2) student teachers' difficulties and problems and the influences of teaching experiences; (3) present situation of teaching supervision system of other countries; (4) present situation and reflection on our teaching supervision system; (5) principles of implementation.

(1) Difficulties and problems encountered by student teachers and their significance

Generally, the difficulties and problems encountered by student teachers can be divided into two types: one is life problems and the other is job problems. The focus of the study is the latter, which mostly resulted from the student teachers' perception and awareness toward outer and objective environment and events. Some scholars summit that the job problems encountered by student teachers are related with their objectives on job. The sources of objectives are mainly from following two aspects: one is the objectives of physical and psychological needs, for example, the expectation for receiving understanding and support from other teachers and administrators and the desire to maintain good relationship with colleagues. The other is the objectives dealing with the needs of teacher's role and organization, for instance, the management of classroom disciplines, the desire to improve students' achievement. As for the significance, there are the following four perspectives to discuss:

a. socialization of teachers

Teachers' socialization is the process that a teacher acquires professional knowledge, skills and attitude. In fact, it is one of socialized professions and part of the individual socialization in the whole life. In order to be a responsible teacher, every beginner has to learn this capacity, to obey professional principles, and to cultivate professional attitude.

The reason that teachers encounter job problems is that they neither aware their role, nor form their self-conception in the social interaction, not to mention to perform adequate behaviors during the socialization. These problems always happen to a beginner in teaching career.Because teaching practice is a critical period for a teacher in his or her career, the outcomes of the socialization in this period not only influence one's future but also reflect the effect of the teacher education in the teachers college.

(b) development of teachers

This perspective, based on cognitive development, explores the process of teacher cultivation and designs the program of self-monitoring strategies and collaboration. Teacher cultivation is a process of cognitive development, and it takes some stages for maturation. There are some basic premises: (i) People handle their experiences by using cognitive structure. (ii) The stages of cognitive structure are developed from simple to complex. (iii) Only through the interaction with individuals and environment, the cognition can be developed. The development is progressing according to the order of developmental stages. (iv) One in different developmental stage possesses different characteristic of behavior.

In the theory of cognitive development, the development of cognitive structure is gradually from simple to complex, from submitting environment to attaining capacity of autonomy and integration. Job problems happen when the complexity of teaching context and one's cognition to teaching are in conflict.

(c) role pressure

In the system of school, teacher's behavior is closely related to "social role" and "individual personality". Since an organization is constituted by the interaction between individuals and system, the behaviors of the individual are more or less influenced by the role or his or her expectation to the role. Once inadequate, confusing and unreachable requests exist, members of the organization cannot fulfill their job and feel depressed. Here, inadequate, confusing and unreachable requests mean unclear role, role conflict and overload of role. (Wang, 1981)

For the student teachers, they have just played a new role of being a teacher, and they haven't been familiar with the new environment, so they are easily to encounter the problem of uncertainty of the role. Moreover, new teachers are normally assigned to some tougher tasks, and they have to dedicate more to fulfill a work. If they receive any pressure from competition, they will be much easier to encounter the overload of job.

(2) student teachers' problems and difficulties and the influences of teaching experiences

In the process of the socialization of teachers, student teachers are in a transformational period. When he carries what he learned in the teachers college into the elementary school, he may fall into the dilemma of ideal and reality, which includes students' behaviors, administration of the school, attitude of his colleagues...etc. Facing this "reality shock", student teachers cannot normally make practical use of what they have learned in the college in the real situation.

These problems and difficulties encountered by student teachers are inevitable as they encounter the reality shock. No matter how much student teachers learned in the teachers college, they have to face new students, colleagues, principals, or rules. They have to try to get familiar with the new environment, and even with the concepts of students' parents.

(a) the items of difficulties encountered by student teachers

The difficulties of student teachers are divided into the following aspects (You, 1987, p.35): (i) those with students, (ii) those in teaching methodology, (iii) those in using teaching tools, (iv) those with colleagues, (v) those with principals and other colleagues, (vi) those with students' parents, (vii) those about work (You, 1987). As the factors which influence job difficulties are sex, serving regions, teaching subjects and personality (You, 1987).

(b) influences of internship experiences to student teachers' profession

The student teachers serve in a competitive environment, and they are always shocked by the discrepancy between reality and ideal. Due to the lack of experiences, they may encounter difficulties, which influence them a lot in their future profession.

i. change of attitude

After some teaching experiences, the attitudes of student teachers tend to be practical, authoritative, and conservative. In the questionnaire "The Pupil Control Ideology Form" designed by W. K. Hoy, D. J. Willower and T. L. Eidell, they divided teachers into humanistic orientation and custodial orientation. The former emphasizes psychological needs, and the latter stresses the formal/top-down relationship between teachers and students. Hoy found that after one-year-teaching, the control ideology of the new teachers significantly turned out to be custodial oriented, but this doesn't happen to students who don't have teaching experience, so this change is because of the teaching experience.

(ii) change of behaviors

B. Bergman found that 57% teachers would change their teaching behaviors from student-centered to authority-oriented. This kind of transformation was the result of cognitive inequality. It is also the alternative to survive.

From the discussion of difficulties and their influences, we can realize that the supervision of student teachers is quite necessary and important. It influences not only student teachers, but also those taught students.

(3) present situation of school teaching supervision system in other countries

All of the systems of teacher training and cultivation of other countries agree that teacher training and cultivation should be a complete and sufficient pre-service curriculum. Only with severe practices, student teachers can transform theories learned before service into real teaching practices, and become a dutiful and responsible teacher (Cheng, 1995, p.69).

1. the United States

Ou (1995) proposed that by employing guidance project, student teachers not only can attain professional responsibility and position, but also take less teaching hours and job burdens because they are allowed to observe other teachers' teaching and discuss curriculum and difficulties with others. With the help of meetings or workshops, they can empower their profession and exchange ideas with others. Besides, teaching schools will form guidance groups composed of principals, supervisors, guidance teachers and other specialists from local bureau of education. They will provide formative supervision and lead summative evaluation, in order to have formal reports including the growth of student teachers and some suggestions to certification.

2. Japan

From 1992, Japan implemented "the System for Beginning Teacher to Get Advanced Studies" which mainly intended to improve the quality of teaching, teacher's personality, knowledge, love toward education, sense of duty and the capacity to praxis. It contends two parts: supervision system and advanced studies system.

Every country in the world pays lots of attention to evaluation during the period of educational teaching. They all agree that the guidance period is the critical period for student teachers to socialize during teacher training. Therefore, as Lu(1982) said, teachers colleges and the authorities on education have to firstly understand the difficulties encountered by student teachers, and then provide relevant help and supervision. Different country proposed different projects. However, these projects are similar in the following ways: they all include (1) supervisors or guidance groups. (2) meetings or advanced studies, (3) capability test, (4) improvement of well-being and payment, and reduction of teaching hours and the burdens of administrative affairs.

(4) present situation and reflection on our internship system

The term "Educational teaching" has two meanings or definitions in our teacher training and cultivation system. The broad definition means that educational teaching includes visiting, probation, trial teaching, teaching practice, guidance personnel teaching and administrative learning, etc. The narrow meaning of educational teaching is teaching practice. From the perspective of intern stage, it can be divided into the intern in school and intern after graduation.

Students of teachers college will be called student teachers when they graduate from school and serve in the elementary school for the first year. The system of student

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teachers is the system for maintaining student teachers' position.

Liao (1993) found some problems existing in student teachers.

1. Their understanding toward the role of student and the role of teacher was not clear enough.
2. They did not fully understand the distance between ideal and reality.
3. They haven't got used to a new place.
4. They were too comfortable to get advanced study.
5. They have given themselves up.
6. They were easily affected by their colleagues.
7. Their academic capacity was not good enough.
8. They were influenced by social utilitarianism.
9. Their social relationship with others was not good enough.
10. They did not know much about schools and school affairs.
11. The ability to manage money was not good enough.
12. Passion or affection easily confused them.
13. Their life habits were not regular.
14. Their dressing and appearance were not clean and fair.

Chen also mentioned the problems faced by student teachers. They may be struck by reality resulted from the distance between reality and ideal. Therefore, a substantial guidance is necessary to cultivate their professional capacity and attitude toward practical teaching situation instead of formal educational teaching (pp. 70-71).

To sum up, though different countries proposed different system of supervision of student teachers, they simultaneously hope that they can increase student teachers' accessibility to usable materials and resources. In addition, they prospect to emphasize more on evaluation. Some also expect that they can truly supervise student teachers through guidance projects or expansively establish advanced studies centers.

(5) the implementation principles and limitation of Distance Supervision

(a) The significance and positive effect of Distance Teaching

> In 1997, the Time elected the giant of computer chips, Andy Grove, the president of Intel as the celebrity. A few years ago, Internet and computer were famous, so the integrated application of Internet and computer technology affect not only technology, economic enterprises, but also family, society, education and nation's competition (Lin, 1998). The president of National High Computer Center of National Science Council, Mr. Chen (1996) mentioned: "though the biggest consumer of Internet isn't education, education is the widest aspect affected by Internet because it popularizes teaching objects/audiences. People who are out of normal education can get the chance to receive education. It provides life learning environment for the population and special education for handicapped (p.31).

Communication creates civilization. Information technology is a kind of communication technology. The development of information technology influences communicative behaviors of human beings. Nowadays, the resources in the Internet are marvelous and continuously accumulated, like an enormous digital library. Except convenience, Internet resources have following characteristics: (1) The information collection can turn out to be a richer knowledge collection. (2) Professions can assist each other through them. (3) They can improve creativity. (4) Information and resources never end up. In Internet time, collaboration is a very important notion. The user is usually the producer and information provider. There is no conflict between the producer, provider and the user. Everyone cooperates with each other.

Cho (1996) continuously explained Internet's influences on education. "Its influences to education depend on the content of education. If the content of education doesn't need much experimental equipment or facilities or if the way of transmission tends to be traditional, such as language, social science, it will be strongly influenced." If the learners are mature, they will easily understand the content, the role of the tool and the differences between real and artificial, then the positive influences will be stronger. On the contrary, if the learners are not mature, negative influences will be stronger. (p. 2)

The term "distance" of "distance teaching" on the fields of enterprises and education means that the transmitters share information in different places. In this study, "distance" means learners and teachers don't share information at the same place. In our country, the Demonstration Center of Information Science(????????) used to demonstrate Television Transmission (????)?Internet Transmission (????) in which the receiver and sender transmit information at different places. However, due to the expense(??) consideration, the former is not as popular as the latter.

Since computer and Internet technology are flourishing in modern society, many companies and research organizations are applying them as tools to transmit information and interact with others. Colleges and universities have their own Homepage and web net (??), and transmit resources through BBS and WWW, even elementary schools have such facilities. Rapid transmission becomes possible and easy.

(b) The work and principles of Distance supervision

Since Internet is so popular, with the help of it, student teachers can receive supervision if circumstances permit, and supervisors can extend their range of supervision, too.

As for the evaluation after supervision, Kozma & Quellmalz suggested that teacher evaluation should emphasize on the following aspects: "specialized knowledge", "teaching methodology", "classroom management skills", "student behavior supervision" and "growth of professional knowledge". Though teachers' professional knowledge is an important essence, they think that the increasing availability of resources and expertise on-line should depend on the facilities they possess. In order to

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bring the system of teaching practice into practice, we should employ this notion of evaluation to the supervision of student teachers. We should not only supervise them, but also assess their performances. If we can do this, the resources on the Internet will work more efficiently.

To sum up, there are three advantages of applying Internet as a tool to teach and supervise:(1) no space limitation (2) no time limitation (3) easy attainment. Besides, we can change ways of supervision. It can be many to one, or many to many, etc. With its help, these resources or important ideas, which originally are difficult to get, can be attained easily, and accomplish their most efficient effects.

III. Methodology

This study was a project under «The Integrated Project of Distance Supervision» by National Science Council. The branch project of the main project«The Integrated Study of Distance Supervision for Elementary Natural Science Teachers»was «The Study of the Growth of the Student Teachers by Distance Supervision». The community of the study includes two professors in the teachers college and 36 student teachers. The whole study began 6 months before the graduation of these 36 student teachers. We designed the Homepage which would be used in the future two years. After September in 1997, the professors supervised these 36 student teachers with the help of DSHL.

A. Community

DSHL in this study was designed and discussed by instructor professors and student teachers, therefore, the term "community" could best explain the role of the researchers.

1. Two instructor professors in the teachers college

These two instructor professors used to teach "Elementary Mathematics Materials and Methods", "Elementary Science Materials and Methods", and "Teaching Practice" (two hours per week) of the third grade, and "Teaching Practice" of the fourth grade for one year (6 hours per week). They are also the professors of the beginning teachers, and at the same time the researcher and co-researcher of this study.

2. Sample of student teachers

36 student teachers registered on August in 1993, and graduated on June in 1998. 20 of them were male and 16 were female. One third of them understood quite a lot about Internet before this work, other two thirds of students learned some basic usages of Internet (BBS, FTP, E-mail, WWW) and skills for application after some training.

B. Tools for research

1. The design and development of DSHL Home Page

According to "Educational Teaching Manual for Graduate Students of 1997" by Ministry of Education, it listed out some disciplines of supervision for student teachers. Except some meetings and visiting sample schools, student teachers have to hand in reports, including (1) intern teaching reports, (2) teaching job reports, (3) a research paper. All of these are the "homework" for student teachers. Since computers are widely used and fascinated by young men in nowadays, for not to increasing the burden of student teachers, this study was composed of (1) overview and reflection of educational teaching: orientation of teaching, child supervision, including administration and educational process, (2) life of student teachers, (3) difficulties and suggestions. All of the information was sent to the two supervisors with FTP. With the help of Internet, supervisors not only could immediately respond to student teachers' problems, but also compensate the deficiency that only supervisors knew their difficulties or only supervisors assist them to solve those problems. Their problems could be seen by other student teachers who could try their best to do brainstorming and interactively provide some suggestions to improve their teaching. By applying WWW, they could cooperate and interact with other student teachers. According to some reviews of literacy and information of meeting, this study analyzed and categorized every problem and checked with experts' content validity.

2. Supervision resources

What was the nutrient provided by the teachers college during student teachers' cultivation of teaching capacity? Since this study was part of the integrated project, in the course of "Natural Science", student teachers could discuss with instructor professors and collect resources by connecting the web of "Elementary Science Resource Bank, ESRB) designed by Director of computer center at Taipei Municipal Teachers College.

C. Collection of materials

1. building supervision on Internet:

The samples of the study could interact with supervisors through E-mail, WWW, etc.

2. meeting with the beginning teachers:

a. discussing some practical problems encountered in teaching

b. evaluating accessibility of applying Distance Supervision.

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and its validity.

c. Checking the effect of Internet Distance Supervision.

D. Data analysis

Qualitative analysis was applied to analyze the teaching reports of student teachers (including personal and overall). According to the problems they encountered, we could observe what they were concerned and aware of, and establish indicators for the growth of teaching. According to the solutions they proposed, we could deduce the change of their teaching action and belief.

IV. Beginning of the Project

After the project was agreed to implement by National Science Council , first of all, I planed to design the Homepage. As matter of fact, before the study, I seldom browsed other homepages on the Net except using computer to edit and sending letters to friends with e-mail. At that time, I didn't know its function, and presumed that designing a Homepage was a tough and magnificent task. Therefore, I intended to invite some experts, teachers in elementary schools, to help me design the homepage; however, they were too busy to assist the project. Mr. Lia, director of computer center in Taipei Municipal Teacher College, told me that he could help me, but he was busy, too. I was afraid that I couldn't control the progress of designing the Homepage. This anxiety delayed my plan. Before that, I never thought that fourth grade students could design Homepage, although some of them were excellent, or used to be the leader of Computer group. In my opinion, they were the consumers of DSHL, not the producers, so I should organize another group to design it. When I discussed my difficulties with them, to my surprise, a student said: "Professor, please speak out what you need, maybe we can try to do it". After a few days, I was obstructed by the design of the picture. My students suggested me to list out some main topics for communication, and they could design the cover. Suddenly, an idea ran through my mind: we have been discussing constructivism for a long time. The main application of constructivism in education was based on the notion that curriculum could be designed and developed through students and teachers' interaction and discussion. If DSHL was designed by student teachers, then this study would be a student-teacher-centered supervision curriculum. Therefore, the whole design of DSHL was done by these 36 student teachers. Frankly speaking, I was deeply impressed on their performance because at that time they had to stay at school for educational teaching, and handled some trivial affairs for graduation. I didn't know how much they could deal with at first. But, no matter how much I required, they still could finished it well and on time. The Homepage was finished when they were the fourth grade students. I did appreciate their hardworking, therefore, I intended to assign some important designers as part-time assistants of this study project. Unfortunately, when I received the missive from National Science Council, which prescribed that student teachers could not be part-time assistants, I felt sorry for their working without any reward.

Anyway, it was a good beginning that these student teachers finished the design of DHSL before graduation. It was also a tool beyond my original intention. It was not only based on constructivism but also suitable for users.

V. The process of using DSHL

The reason that the project could start was due to the help of some students. Not only did they establish the base of DSHL, but also the hardware system which they searched some positions in the computer center as the server for 24 hours.

They decided some important columns of DSHL. Personally, I hoped that these student teachers could contact with each other through DSHL. Besides, DSHL could be a supervision media beyond the limitation of space and time for Professor Tan and me. In the beginning, I presumed that the use of DSHL could increase the opportunities for connecting and supervising between these student teachers and me, and compensate the deficiency of traditional way of supervision. However, according to the rule of National Taipei Teachers college, DSHL couldn't substitute traditional way of supervision; in other words, except DSHL, we still had to hold teaching practice reports once two months, return-school meeting and research report. Besides, if student teachers encountered some difficulties or there were some chances to visit teaching schools, we had to try our best to meet those principals and directors. Of course, we were grateful for their direction and supervision to our student teachers. Table 1 is the statistics of on-line situation of 36 student teachers and their service schools. 20 of them were male, 16 were female. From September in 1997 to April in 1998, 19 of them were usually on-line while 7 of them were sometimes and 10 were never on line, including a student teacher who was good at computer but served in the Island of Xi Ju, Ma Zu. These beginning teachers served around Taiwan according to their T-score and choices. Ten of them had the chances to teach the course of "Elementary science".

In the beginning, those usually on-line were main members of designing DSHL. Later,at the first return-school meeting, we added another supervision course which discussed some issues about computer settlement and practice again and again with these student teachers. There was a case that a student teacher who served in Ma Zu wanted to have on-line meeting discussion. Though everything was settled down on the telephone, however, we didn't receive any answer from him in due time. This student teacher also tried lots of times, but the line was too busy to connect. We guessed that this trouble resulted from the computer center where were settling these facilities. The reason that other student teacher could be on-line was because they practiced DSHL directly at computer center. Student teachers used Bulletin and Stories Shared of DSHL most frequently. Sometimes they applied the e-mail for sending Christmas card, New Year card and intern reports to Professor Tan and me. Basically, some teaching difficulties in Stories Shared were the following: (1) methods to supervise special cases in the classroom, (2) ways to deal with parents, including Meeting with Parents, how to write a letter to parents…etc, (3) demonstration of teaching, (4) contest of science demonstration, (5) teaching sharing (ex. Go birding with students). In my opinion, there were few difficulties in life for them, partly because of their positive personality, partly because of the high quality of the principals in the elementary schools. Most of these student teachers were optimistic, active and easy-going. If they came across to any teachers, they would happily greet to them. Unlike some students who always fought shy of teachers due to their presupposition that teachers would not know them, not even to appreciate their good performance, these students were more mature in EQ. In addition, the quality of principals in the intern school was high. They could understand the green and inexperienced performance of these student teachers. Some schools have began to cultivate some supervising teachers for new Teacher Training or Cultivation System, except the original supervision of principals and directors. These supervising teachers tried their best to guide these beginners and provided necessary help during their teaching career. Therefore, they would encounter fewer difficulties and never feel lonely. Sometimes, some difficulties were not as tough as they supposed. They just hoped that someone could provide some ideas and suggestions, such as how to write a letter to invite parents to "Meeting with Parents"? How to talk with parents for two hours? How to prepare for the task of Science Demonstration? As for the training of science demonstration, we always provided some courses when they were fourth grade students, so they had some prerequisite experiences. Besides, Natural Science resources in Taipei Municipal Teacher College could provide rich information and materials for them. However, from the aspect of research, I still couldn't fulfill my original purpose of this project; in other words, what I got from

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"the growth in Natural Science Teaching" of teachers college students was different from what I planned at first. Actually, what I intended to do was to analyze the process of teachers growth and to solve their difficulties through their problems posted on-line. For this reason, I called some important designers of DSHL and held a meeting with them. Out of my expectation, I found that they did support my study, but due to the reason of inconvenience of computers, their willingness was gradually faded. That's why I made a questionnaire to understand their relationship with computers. Table 1 was information about the 21 responses received. These student teachers described their teaching life: everyday, when I came home after school, I was as tired as a beaten cock. What I wanted most was to sleep and take a full rest. Until 8 o'clock, after having dinner, watching TV, I had to prepare for the teaching for next day. If I wanted to be on-line, what I could do was to take a look at Bulletin, share my feeling, and then switched off the computer, or I would be trapped by the Net, and couldn't get up for courses next day. Not to mention posting any question or difficulties! If I'd liked to ask some questions, I had to think and reflect my teaching. It took at least 30 mins to finish writing them… Of course, no questions didn't mean no reflection. Reflection in teaching was my strategy to improve my teaching. Sometimes, when I made any mistake, I would correct or revise immediately…

These student teachers not only shared their teaching experiences with me, but also suggested me actively providing some questions instead of waiting for their questions. Therefore, I adjusted some of my orientation. After knowing that there were only ten students taking charge of the course of "Natural Science", and others taught Mandarin, Mathematics, we designed 2 kinds of questionnaires: The questionnaire "Teaching and Learning Natural Science in the elementary school" was composed of two types: type A and type B. (A for "Natural Science" teachers and B for ordinary teachers). Their reaction and responses were listed in Table 2 and Table 3.

Table 1.

21 student teachers and their computer facilities

Questions	Yes	No	No answer
1. Does your school have any computer classroom?	13	8	0
2. Is the computer classroom on-line?	5	8	0
3. Is your school planning new computer classrooms?	6	12	3
4. Do students learn how to connect the Net?	3	16	2
5. Does the computer in the office connect the Net?	16	5	0
6. Does the school allow you to use on-line computer in the office?	10	5	1
7. Do you own any on-line computer?	16	5	0
Question	No money	No tele-phone	Other reasons
8.Why don't you have on-line computer? What's the main reason?	0	2	3

Table 3-A Questionnaire of teaching and learning of Natural Science

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Questions	Yes	Medium	No
1. I will read teaching guidance carefully.	11	0	1
2. I am satisfied with the guidance of this unit.	1	9	2
3. Facilities and materials of this unit are sufficient.	3	8	1
4. School administration supports your teaching.	3	8	1
5. During the process of teaching, I can control the implementation and pace of activities efficiently.	5	5	2
6. Students are interested in the process of learning this unit.	4	6	1
7. The results of learning are good.	5	5	2
8. Students can understand the meaning of questions in the workbook.	5	5	2
Question	easy	medium	hard
9. The level of difficulties of the workbook.	3	7	2

	a lot	medium	a little	no time to review
10. "The Natural Science Teaching System for Elementary School" designed by Taipei Municipal Teacher college is helpful to my teaching.	0	2	2	5
the length of time for preparing materials	1 hr	1-2 hrs	2-3 hrs	3hrs
11. Prepare for one unit	0	6	4	2
12. Read on the materials	8	4	0	0
13.Design teaching context, materials, equipment…	6	4	1	1

Table 3-B Questionnaire of learning and teaching Natural Science in the elementary school

grade	1st		2nd		3rd		4th		5th		6th	
Question	yes	no	yes	no	yes	no	yes	no	yes	no	yes	no
1.Students in the classroom like to explore Nature.					0	1	4	4	3	1	2	1
2.Students like to study Natural Science.					0	1	6	2	3	2	3	0
3.The order and performance in Natural Science is worse than in other classes.					1	0	8	0	5	0	3	0
4.Materials for Natural science experiments are sufficient.					0	1	4	4	2	2	1	2
5.Students cooperate each other in Natural Science.					0	1	3	4	2	2	2	1
6.The tasks are difficult.					1	0	3	4	2	3	1	2
7.Students answer the questions in the workbook with the help of reference book.					1	0	5	2	2	2	2	1
8.The performance of students in Natural Science is good.					0	1	6	2	2	3	3	0
9.The performance of boys in Natural Science is better than girls.					0	1	6	2	0	5	2	1
10.Teachers are more serious to boys than to girls					0	1	1	6	0	4	1	2

The information not only provided me something about the teaching situation of Natural Science, but also helped student teachers to pay attention to students'

learning. Besides, for those teachers who didn't teach Natural Science, they could also try to understand student's learning of other courses. Therefore, the questionnaire of type B could be helpful to those teachers.

VI. System facility

A. Present situation

Respecting the online supervision situation of these 36 student teachers, we chose "Distance Supervision Hot Line" as the name of the study. We focused on the following three parts: (1) system, (2) online discussion, (3) resources provision.

1. System

As for hardware, we used PC Server(Pentium mmx 200 cpu, 64 MB RAM, 3.2 GB HD and Linux work system). The reason that we chose these software and hardware system was that a group of fourth grade students who were good at computers made the decision and assisted to create such environment. National Science Council provided 50 thousand NT dollars for hardware. Now the hardware is in the computer center in National Taipei Provincial Teachers College. It is turned on 24 hours every day.

2. Content of the system

The homepage of the system was designed before August in 1997. It focused on the following 6 main parts: (1) teaching difficulties, (2) teaching resources, (3) overview of research, (4) research participants, (5) bulletin, (6) chat, and visitors counter and online meeting office. On February in 1998, we switched our emphasis on actively collecting of materials, such as the tests on Natural Science, from Bulletin. The tests were divided into type A and B in order to understand the student teachers' teaching development in Natural Science. If he or she was the guidance teacher of the class, students' learning was part of the information we would like to gather. On March in1998, we applied to netSTAC of the United States for increasing counters of persons on- line and the questionnaire for evaluating system.

VII. What did I do for those student teachers through using DSHL?

Originally, I supposed that through using DSHL, we could provide some "nutriment of supervision". However, after a period of time, I reflected what I had done for them. Actually, I realized that sometimes directly providing solutions to them was not as good as I expected. For example, if someone asked, "What are the differences between the motions of snails and whelks?" Why should I give him the correct answer? Couldn't he check encyclopedia or biological references or observe them by himself? I decided not to answer it. A few days later, another person provided the answer in a simple way. Besides, originally I wanted to categorize those questions and solutions they provided actively in order to understand their growth. If I really did it in this way, DSHL would not be the Hot Line for Supervision, but a tool to collect information about the teaching growth of student teachers. Therefore, after reflecting and reviewing other supervision system done by middle schools, I added the "discourse of supervision" and other research projects in our teaching resources. I hope my students could take a look at them, increase their knowledge and improve their teaching abilities. Recently, I tried to improve the functions of DSHL, and made some adjustments. I spotlighted "Natural Science Teaching Resources for Elementary Schools" done by Taipei Municipal Teachers College and put it on the most obvious place. I hope student teachers could evaluate it and possibly use it as important resources. From the results of their evaluation, I got the following findings:

	very good	so so	bad	never see	no response
What do you think of the database of "Natural Science of Teaching Resources" done by Taipei Municipal Teachers College?	5	9	0	3	4

In order to produce more substantial effect of Natural Science teaching resources for elementary schools, we designed a questionnaire of system evaluation on April. Because of inconvenience, we didn't receive many responses. The mean value was adjusted to 3. Therefore, we had to make more efforts to improve the content in order to conform the need of teachers.

VIII. Conclusion

Nowadays, in modern society, technology brings people into another new world. Being an educator, he or she must realize the function and influences of high technology and take good advantage of it to greet brightful and promising future.

If the cost of creating Internet is cheap and it can be popularly applied, Internet teaching can compensate the deficiency of traditional classroom where students and teachers are opposite. In addition, it can be a strong tool for education reform. Internet not only enlarges the quality and quantity of education, but also transforms the teaching methods. The characteristic of Internet, which is whenever to use and whatever to choose, increases the opportunities for the mass to receive education.

Internet is different from traditional teaching because you can easily get any information in any time. Besides, teachers and students can easily interact and communicate with each other without any time or space limitation . Most surprisingly, the forms of interaction can be various, including one to one, one to many or many to one, many to many. The learning materials are various in the same way. It helps the transformation of supervision. Since the difficulties encountered by student teachers were almost the same, they wouldn't feel lonely if they could discuss them with others. However, there must be some more considerations to increase the power of Internet, for example, (1) Although Internet materials are so various that they could broaden the depth and width of the content, could the learning be truly "automatic" and "active"? (2) What is the growth of Internet supervision? (3) How do the supervisors understand students' learning in DSHL? (4) What are the characteristics of the designs of interaction materials for the supervision? (5) What kinds of training should student teachers receive to improve their teaching ability? (6) What do we want to discuss or prove from Internet supervision? (7) Do the situation of service schools influence the educational teaching, since every student teacher services in different school? If yes, how do I deal with this idea through Internet, truly reflect their performance, and provide them helpful supervision?

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Secondly, it is necessary to evaluate the performances of student teachers and students. Performance assessment, think aloud observation and frequency of using Internet materials are good ways to understand their difficulties and thinking. Besides, we can evaluate Internet studies, teaching and supervision projects in order to improve the quality.

From the discussion of literature and the procedure of the study, we can understand: to implement Distance teaching and supervision, we can firstly build and create the hardware and software, and then train some teachers. Besides, cooperating with society community, rewarding the studies about teaching supervision and Internet, and building up the concept of Internet ethics are important steps as well. We have to keep in mind that before applying an extremely convenient tool, we have to reflect our original intention. In addition, we have to remember that Internet isn't a savior or panacea which can solve everything, or we will be controlled absolutely.

IX. For more

What kind of research was it? Why did it look so arduous and incomplete in structure? Part of the reason was due to the conflict and inconsistency between theory and practice. Maybe it could be called "action research", which caught more and more researchers' attention. Song (1993) gave an definition to the term "action research" in a conference held in National Taitong teachers college, he said, "...action research is a kind of methodology which includes various methods for study. Its characteristics include: (1) The researcher is amid the context of problems. (2) The context problems are associated with the co-worker of the research. (3) The definitions of questions and solutions are in the process of continuous trials. (4) The purpose of the study was not to satisfy the desire of knowing or enlarge the literature of academic studies, but to change the situation and the researcher…. These characteristics are transformed during the process on praxis. They also aroused a lot of philosophical reflection." I sincerely hope that some wise and intelligent experts and scholars can help me to utilize completely the structure and functions of DSHL. I want to be a responsible supervisor who can provide students precious help, and hope that it will not be a big burden for these 36 students. What I want to know more is the attitude of student teachers toward DSHL and this study.

To sum up, this study was born after some real questions. During the half and a year, we have tried our best to find out the causes and have provided some solutions... All we did is to explore the effectiveness of DSHL.

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